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RAIL-ROAD NEWS.

Locomotive Race at Lowell.

On Wednesday, last week, the race to try the speed of various locomotives took place, and a great crowd was attracted thither. It came off over the Lowell Railroad, the distance being nine miles exact, from Wilmington to Lowell, and the following gentlemen acted as judges:—

Professors Treadwell and Pierce, of Cambridge; G. H. Corliss, engine builder, of Providence; Isaac Hinckly, agent of the Merrimack Mills, Lowell; and W. P. Parott, engineer, Boston. Six engines were run, but the result of the race, so far as regards the awards of medals and diplomas by the Middlesex Mechanics' Fair, is not yet ascertained, the relative weight of machines, the pressure of steam, and other minor matters being taken into consideration in their decision. The Neponset, Nathan Hale, Addison Gilmore, of the Western Railroad, and the Addison Gilmore of the Passumpsic, the Union and Essex, were tried; and the A. G. of the Western attained the highest rate of speed, accomplishing a single mile in 1 minute 11 6-10 seconds, and averaging about 47 miles per hour. The judges report will be published and will form a useful work of reference.

The Pacific Railroad.

The St, Louis Republican, of the 20th ultimo, announces the return to that city from New York, of Mr. Allen, President of the Pacific Railroad Company. While at the East he had made contracts for the construction of a portion of the road, and had ordered rails for the first division, about forty miles, and locomotives and machinery for its equipment. It is expected that cars will be running on a portion of the road by the 4th of July next.

Railroads to the Gulf of Mexico.

Col. Dexter, an experienced engineer, has contributed an article to the Montgomery (Ala.) Journal, on the importance of the speedy completion of the works contemplated to complete the line of railroad connection from New York to the Gulf of Mexico.

Locomotives and Brooklyn Authorities.

The Brooklyn corporation has forbidden the Long Island Railroad running their engines into the city. It is asserted that great injustice is done by this action; there is a hot war on the subject between the Railroad and corporation authorities.

Cuba Once a Part of the American Continent.

It is the opinion of some of the geographers that Cuba, St. Domingo, and other West India Islands were once connected with the main land. The disruption is supposed to have been occasioned by a great catastrophe of nature, long before the commencement of human records. By this hypothesis the Gulf Stream now rolls along a channel where once the solid earth defied the surges of the ocean, and resisted the torrents rushing down the great rivers Mississippi, Alabama, Tombigbee, Escambia and Apalachicola.

IMPROVED MACHINERY FOR DRESSING MILL STONES.---Fig. 1.

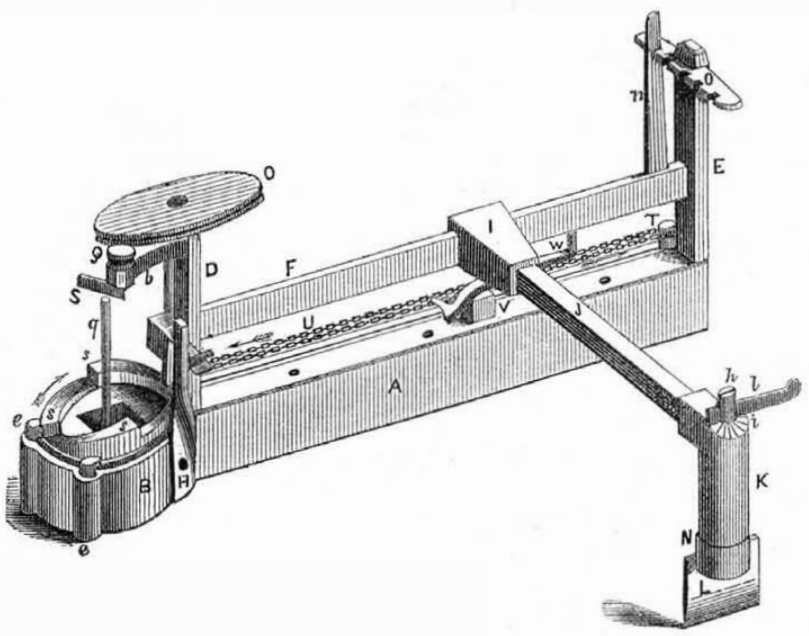
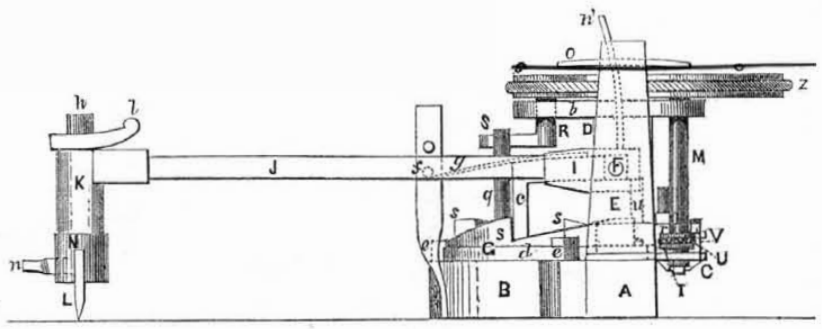


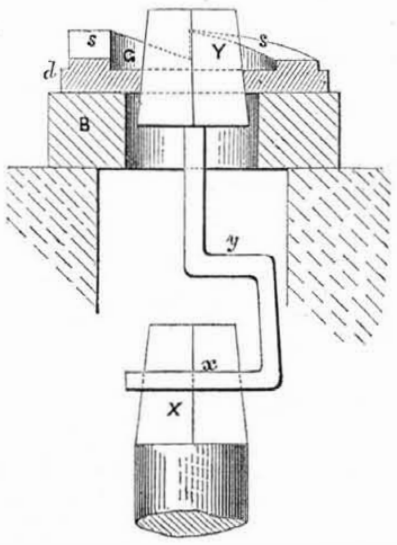
Figure 2.



The accompanying engravings represent an improvement in machinery for picking and furrowing Mill Stones, and for dressing stones of any description, invented by Messrs. S. W. and R. M. Draper, of Boxborough, Mass., as briefly noticed by us last week.

Figure 1 is a perspective view; fig. 2 an end elevation, and figure 3 a sectional view of part of the machinery. The same letters refer to like parts. A is a bed piece of cast-iron, with a circular head-piece, B, at one end. C is a plate secured to the top, A, and hanging over the back part of it, and containing a slot which extends nearly along its whole length. D E are two upright standards, one at each end of the plate, A; the one. D, has a horizontal arm, *b*. F is a square shaft running in

Fig. 3.



bearings in the upright standards; one end projects through D, and carries a bent arm, *c* through which it receives motion by the cams; I is a block fitted on the shaft, F, and is capable of sliding along it. This block receives the end of the hammer arm, J, which carries at its end the socket, K, bored at right angles to the length of the arm to receive the pick stock, N; this stock is a cylindrical metal socket, having a cylindrical shank, *h*, fitting into K, and having a slit across it to receive the pick, L; there is a screw which secures it. The shank, *h*, turns freely in the hammer socket, but can be secured in any position by a key, *l*; the lower edge of this key enters one of a series of notches, *i*, in the top of the socket, and holds the edge of the pick in any required position. G is the arm which gives the vibratory motion to the shaft, F; it rests on the face of the ring, B, and has a square hole through it to receive the end of the spindle which drives it; it has a flange round its lower edge, overlapped by the dogs, *e e*, which keep it in place, but allow it to rotate; it has a suitable number of inclined projections, *s s*, for the purpose of acting on the bent arm, *c*, thus giving the shaft its motion. The arm, *c*, is kept in contact with the face of the cam by a spring, *g*; the end of this spring projects beyond the end of the arms and bears under a pin (*f*, fig. 2), inserted in a small pillar, H; this spring also gives force to the hammer, the amount of said force being regulated by the height of the pin, *f*. There is another spring, *n*, on the opposite end of the shaft, F, which can be inserted in either one of a series of notches in a bar, *o*, secured to the standard, E; this spring is for altering the force of the blows while working, should there be any irregularities in the hardness of the stones' surface. M is a vertical shaft working in bearings in the bed piece and arm, *b*; O is a pulley on it above; there is a small one below. Z is a band to drive the large pulley from a smaller one, Q, on the spindle, R; this spindle receives motion from a crank, S, which is driven by the pin, *q*, secured to the face of the cam, G. T is a pulley hung loosely on a fixed stud *r*, secured in the bed piece. U is an endless chain running round small pulleys and carrying pins or studs, at any suitable distances apart. V is a small metal block fitted to the slot in the plate, C, and capable of sliding along it; it has a small tongue, *u*, standin up, which fits in a groove in the back of the block, I, so as to allow the said, block to vibrate easily, but to carry it along the bar, F, when it is itself moved along the slot in the plate, C. W is a catch bar which works on a pivot, on the top of the block, V; it has two forks, *v*, which may be brought in contact with either of the chain pins, which, when the chain, U, is in motion, will move the block, V, along the guide slot and the block, I, along the shaft, F. X is intended to represent the top of a mill spindle, and Y a false spindle of the same form as the mill spindle; this latter has an eye, *x*, attached below it by a bent rod, *y*; the said eye fits to the top of the mill spindle, and raises the false spindle to make it form a continuation of the mill spindle.

Operation in Picking and Furrowing a Pair of Mill Stones.—Supposing the bed stone to be first operated on; the runner is first removed to expose the face and bed piece, A, laid upon the stone with the circular head, B, over the eye; the top of the mill spindle passes through the head which has a circular opening in it, and is inserted in the square hole in the cam, G. The bed piece is then brought to the required position on the stone for commencing the operation. The blocks, I and V, are moved along the bar, F, and the slot, to one end (that, we will suppose, towards the end farthest from the centre of the stone), and in order to effect this, the catch bar is moved to bring its fork against one of the studs, on the chain. The mill spindle is then set in motion, giving motion to the cam, G.

We would observe, here, that two cams should be provided for every machine, with their projections, *s s*, inclining opposite ways, as millstones do not rotate always in the same direction.

Motion being given to the machine, the cam, G, as it revolves, acts on the arm, *c*, raises it every time it ascends a projection, S, and allows it to descend when it passes the end of the projection. Every time the arm, *c*, is raised, the hammer and pick are raised by the motion given to the shaft. Every time the arm falls the hammer drops by its weight, which, with the spring, *g*, causes the pick to strike the stone with sufficient force to make the required cut. By the motion of the endless chain, the blocks, V and I, are moved along, carrying the hammer and pick, causing them to cut in a direct line, until the blocks arrive at the end of their paths, when, if it is desired to cut back again, the catch bar is moved to the opposite side of the chain, and the fork, *u*, brought into contact with one of the studs on the opposite side of the chain, when the hammer and pick commence cutting back in the same line; but if it is required to cut in another line or furrow, the bed piece is moved by hand a sufficient distance to bring the pick to the required point, when it will return in a new line. The operation proceeds in this manner, the motion of the hammer and pick being reversed at the end of each line cut, &c. When the runner is to be cut, it is laid upside down upon the bed stone, and the bed piece, A, is laid upon it in the same manner as the bed stone just described, but in this case the mill spindle is not long enough to reach the cam and the false spindle spoken of then comes into use, which is placed on the top of the mill spindle and inserted in the cam, and the action described proceeded with in this case like in that of the other stone. It will be observed that, in fig. 1, the spindle, *q*, is detached from the crank, S, but they are united in fig. 2.

The attention of millers will no doubt be directed to this machine, and more information can be obtained by letter addressed to the inventors, Messrs. Draper.

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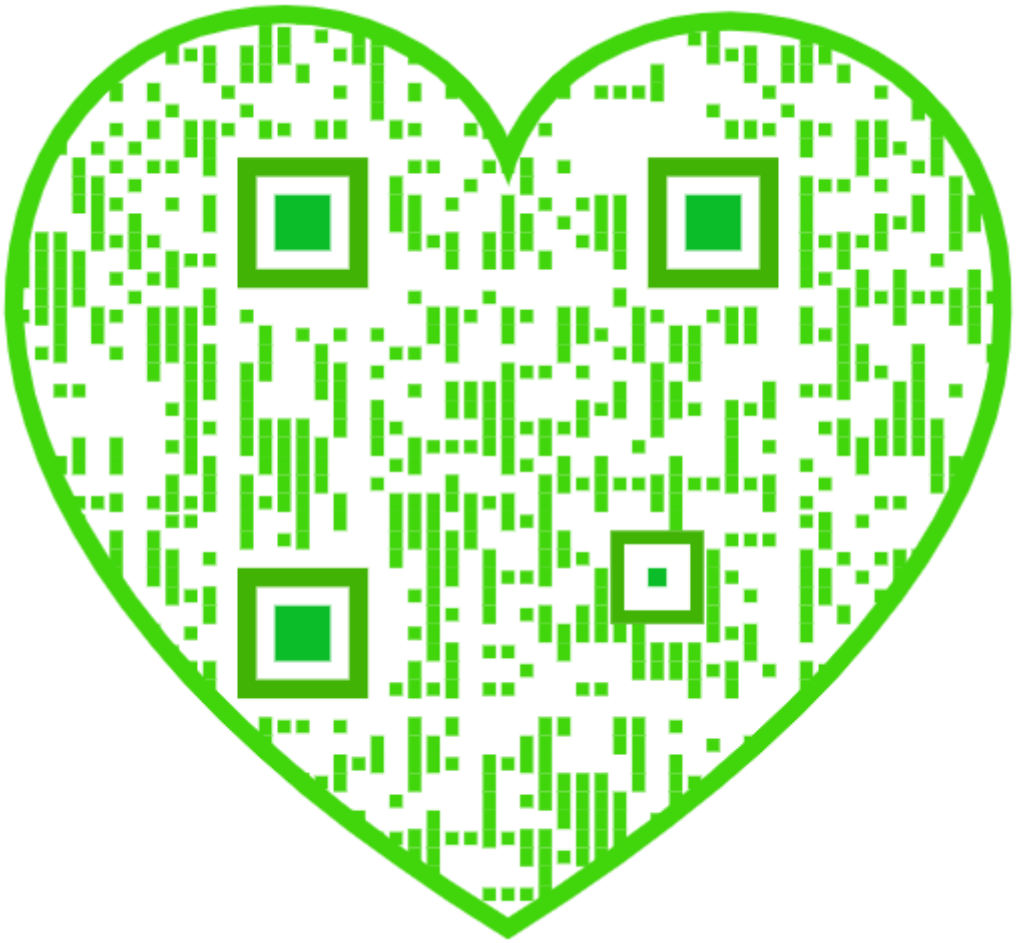

MISCELLANEOUS.

Foreign Correspondence.

LONDON, Sept. 28, 1851.

Leather.

I believe that I have not said a word about the articles of leather exhibited here, and for this I must ask my countrymen's pardon, for the tanning interests of America are indeed very great, and employ millions of capital. The leather of the United States being mostly of hemlock tanned kind, has attracted a great deal of attention, not so much for its comparative quality with the English Ben—I am speaking of sole leather—but from its own independent quality. The leather here is more than twice the price of the American, while it is generally acknowledged that it is not by any means as much superior in quality. The color of the hemlock skins has been objected to, but that is nothing to sensible tanners, and a decided compliment has been paid to the American tanners by the English, for they have said "every hide in the American department is tanned—thoroughly tanned."—This is not the case with leather from Russia—there is not a hide of sole leather exhibited which is tanned in the middle. This shows that the principles of tanning are thoroughly understood in the United States, while in Russia they are not. The Russian leather has a peculiar smell, derived from birch bark, which is used in the tanning I believe. The English leather looks well, no sole leather here can equal it, but I think I have seen some Baltimore leather as good. The French fine calf skin is the best by far exhibited, and maintains the high character which France has long had in this article. There is a great quantity of leather exhibited—every nation that shows a rag, shows a piece of leather. It seems to be an article of manufacture belonging to every nation, tribe, and tongue. The quantity from Turkey is considerable, and looks very well, but no leather surpasses that in the English department except the French calf spoken of. I have been told that the old methods of tanning are still pursued in England, and that of many plans brought forward to shorten the process, within twenty years, all have been abandoned. It was supposed at one time that by exhausting the air out of the pores of the skins, confining them in a strong air tight vessel, and letting in the tanning liquid, that the skin would be tanned in a few hours, as the *ouse* penetrated at once into the interior of the skin. Whether from a defect in the apparatus or the mode of working—I do not know, for the plan looks reasonable—this process was tried and abandoned. Pressure has also been resorted to, that is using a force to drive the tanning liquor through the pores. This plan was also abandoned, and it is now asserted by English tanners, that the action of tanning is slow, that it requires time for the tannin and the gluten of the skins to amalgamate and form a truly good insoluble substance named leather. Well there may be a profound chemical truth at the bottom of this idea—"soon ripe and soon rotten," is an old proverb and contains much truth. The English way of tanning is to commence with very weak liquors and very gradually increase in strength, and all the tanneries proceed on this slow principle. It is said if strong tanning is used early in the process, to quicken it, the solution is prevented from reaching the middle of the skin by a too early formation of leather on the surface. Oak bark is the common tan used in England along with some catechu. The latter makes bad leather, but is very full of tannin.

I have been informed by some English tanners that there are not one half of the hides tanned in England that there used to be. At one time the export of English leather to the United States was very great, now it is very small comparatively speaking; English leather once found its way into some parts of Germany where it is now excluded. There is a finish about the English fine skins for bookbinding, which no other leather possesses. It has a smoothness and closeness of grain which makes it look beautiful. It strikes me that I never saw such skins in America, I hope this hint will not be lost upon our leather dressers. We can do whatsoever another people can do, and a little better in the long run, I think. It only wants the attention of our people directed to the precise object, and then they are sure to "go ahead." In respect to leather, I subscribe myself as usual.

EXCELSIOR.

Great India Rubber Patent Case.

The long contested india rubber cases, between Goodyear and Day, came up for a final hearing in the U. S. Circuit Court, for the District of New Jersey, in Trenton, Sept. 30, before Judges Grier and Dickerson. There were two actions, one at law and one in equity, involving the validity of the Goodyear Patents. The defendant was ready and demanded trial in the suit at law.

The plaintiff filed an affidavit, and moved to postpone the trial at law, moving at the same time that the case in equity, praying for an injunction, should be taken up and tried before the suit at law, upon the ground that the defendant, by certain contracts, was technically estopped from denying the validity of the Goodyear patent.

The defendant demanded a trial at law, on the ground that it was the only action by which the validity of the Goodyear patents could be tested; the counsel for the plaintiff as earnestly insisting that the suit in equity ought to be tried, seeking, seemingly, not so much to try the validity of the patents as to estop the defendant from contesting them on the ground of his contracts.

After considerable skirmishing between the counsel, on both sides, for two days, it has finally resulted in the continuance of the suits pending between the parties until the 15th of February next, in order that the testimony on both sides may be completed. Thus, therefore, the matter stands.

There is surely something wrong about our patent trials. Delay after delay and no settlement. This is not right.

Something for Farmers---Exporting Peaches.

It is known that the United States produces immense quantities of that most delicious fruit—the peach, and so far as we have heard, none have ever been brought to this country. A gentleman on board the Africa has, however, made the attempt, and with some care has succeded in bringing them in a perfect state. He has brought them as a present to the family and friends of a gentleman farmer of this town, who may, therefore, claim to be the first importer of ripe peaches from the United States to England.—[London paper.

As next year in the customary course of things, may be expected to be a good peach year, we hope our farmers will lay past the above information, and endeavor to profit by it. A profitable peach trade may be carried on between this city and England. The time will yet come when fresh fruits will be shipped by every steamer, the same as they are now shipped every evening from this city for Albany and other northern cities.

Singular Case.

Dr. J. H. Davis, of Pine Plains, N. Y., died on the 16th inst., from a small wound inflicted while performing a post mortem examination some two or three years since. After suffering about a year with a severe pain in his hand which received a cut, to all appearance the dicease had left it, and he appeared in usual health until about six weeks before his disease, when the pain re-appeared and spread through the whole system, causing great suffering, which was unconquerable till relieved by death.

Commissioner to Examine Into the Factories.

The Providence (R. I.) Mirror announces that Welcome B. Sayles, Esq., has been appointed by the Governor a Commissioner to examine into the condition of persons employed in the factories of that State, their ages, the number of hours that they are employed, their opportunities for education, &c., &c., all of which is to be reported to the General Assembly. Mr. Sayles has entered upon the duties of his commission, and expects to present a partial report at the October session of the General Assembly.

Benjamin Robbins Curtis, Esq., of Boston, has been nominated by the president to fill the vacancy on the supreme bench created by the lamented decease of Mr. Justice Woodbury.

Improved Melodeons.

Mr. A. L. Swan, of Cherry Valley, Otsego Co., N. Y., has taken measures to secure a patent for an improvement in Melodeons and other keyed wind instruments of a similar nature. His improvement embraces three new and useful results in the construction of the exhausting bellows alone, whereby it is made—first, to exhaust nearly double the quantity of air to that exhausted by the ordinary exhausting apparatus occupying the same space; second, it produces a peculiar clear ringing tone, which the ear can appreciate, but which cannot be described; third, it exhausts with equal power at all times, no matter what may be the position of the movable flap or top of the receiving box, thereby sustaining a note with uniform power as long as the apparatus is exhausting. A new improvement is also made in working the bellows in a more convenient manner, by which the operation is rendered more easy to the performer—this latter improvement is of great value in operating the instrument. Mr. Swan has long devoted his attention to the construction and improvement of such instruments, and has patents for former improvements. Engravings of his Parlor Melodeon will be found on page 228, Vol. 5, Sci. Am.

Improvement in the Manufacture of Gongs.

Mr. Vine B. Star, of East Haddam, Middlesex Co., Conn., has taken measures to secure a patent for a new and useful discovery in the manufacture of gongs or sounding plates like cymbals and Chinese gongs. The invention is a very original one indeed; it consists in making the basis of the gong of sheet iron or steel, putting a rivetted rim round it, and then putting an alloy of tin or copper, or any suitable metal to give the gong the proper tone. The operation is a chemical one, and involves a knowledge in the manipulation of coating metals. The art of making bell metal and gongs is quite a secret, and the toning of such metals is a very critical and troublesome operation. Perfect command of the exact tone for every gong is asserted to be held in the hand of Mr. Star.

Improvement in Attaching Hubs to Axles.

Mr. Elnathan Sampson, of Claremont, Sullivan Co., New Hampshire, has invented and taken measures to secure a patent for an improved mode of attaching hubs to axles, the natureof which improvement consists in attaching the hub to the axle by means of two collars attached to the axle, each of which has a flanch at each end, and there being a disc attached to the back band of the hub, it slides between the double flanches of the collar, thus coupling the hub and axle together in a very simple manner. Dust and sand are prevented from getting in between the disc and flanches, by a head which is on the outer side of the disc and flanches, and which projects over the rim of the outer flanch.

Night Lamp for Ships.

A night lamp has been invented by Mr. H. Carmick, of this city, with a view ot preventing collisions at sea. The captain proposes using at night large plates of colored glass to designate the particular course which a vessel might be heading. By the use ot bright colors, as red, green, yellow, &c., properly disposed, it would seem that accidents at sea may be avoided. Something of this kind is imperiously demanded, both from the increasing number of steamers and the increasing rate of speed. Captain Carmick's plan has been submitted to the N. Y. Chamber of Commerce, and received from that body a favorable report.

California.

By the latest news from California, the country appeared to be in a desperate state morally, or the papers greatly exaggerate the state of affairs. Lynching was quite a common practice. The gold appears to arrive in considerable quantities, and the crushing and washing of the quartz rock by machinery were operations which now gave better returns than mining in the mountains.

Destruction of Vines in Europe.

A parasite plant has attacked the vines in Naples, Tuscany, Parma, Piedmont and the States of Rome. The grapes become bitter, and when partaken of produce acute suffering.

The Allegheny River,

Mr. Ellet, the eminent engineer, has recently published a report respecting some surveys which he has made of our western rivers, it is full of interest as the following extract will show:—

"By precipitating the waters of the Allegheny down a slope of more than 1,000 feet of perpendicular height, over the borders of the basin, into the Lake, a succession of cataracts might be formed which would rival Niagara in sublimity.

From the remote sources of the Allegheny, a boat may start within a few miles of Lake Erie, in sight, sometimes, of the sails which whiten the approach to the harbor of Buffalo, and float securely down the Conewango to the Allegheny, down the Allegheny to the Ohio, and thence to the Gulf of Mexico. In all this descent of 2,400 miles, the descent is uniform and gentle."

Horse Power Ditching Machine.

Mr. Charles Bishop, of Norwalk, Ohio, has brought into requisition a machine to do away with spade labor.

His machine is worked by horse power, and is provided with a revolving excavator, the shaft or axle of which lies in the direction of the length of the ditch. The excavator is of a screw form, and is operated by an endless chain. The ditch is cut of a semi-circular form, and it deposits the cut clay, or other kind of excavated earth in a box, from whence it is delivered at one side on the road by scrapers attached to the endless chain. The machine being propelled forward by a friction wheel or roller, moving in the ditch, and operated by the excavator shaft.—[Tribune.

[See, on page 388 of our last volume, a notice of this invention.

New Propeller.

The Sentinel and Witness, Middleton, Conn., speaks highly of a new propeller which has been tried there on a boat. It is the invention of Mr. Franklin Kelsey, of that place, and has been named the "Fish Tail Propeller." It is said to be very simple (so are all our propellers), but we are not able to form an idea of its particular form nor action by the description.

Florida Salt.

It is estimated that from 30,000 to 40,000 bushels of salt are made annually at Key West by solar evaporation. The salt is said to possess superior qualities for saving meat, and is much sought after. The business is now carried on to a small extent, but can easily be extended a thousand-fold, as the natural salt ponds are very extensive. It is predicted that it will become a very important trade in a few years at Key West.

Discovery Relating to Bees.

It has always been regarded as a fact that bees require the light to be carefully excluded, but we learn by the North American Gazette that Mr. Longstreth, of Philadelphia, a clergyman, has hives of his own invention, in which the bees are exposed to the full light of day so that all their beautiful works are as easily examined as the articles exhibited in a shopkeeper's window. They do not manifest the slightest dislike to such a perfect flood of light.

Trade Between the United States and Canada.

The Montreal Herald of the 29th ult says:—

"The largest sale of wollen shawls that ever took place here, or we believe, on this continent, was made by Scott & Glassford, yesterday, for account of the Bay State Mills, situated at Lawrence, near Boston.

The attendance of merchants from various parts of the country was very large—biddings were spirited, and every lot on the catalogue was sold, realizing a satisfactory price."

Locomotives for the South.

The splendid new railroad engine "Potomac," which was in the Jubilee procession at Boston on the 19th ult., and attracted universal admiration, was shipped on board schooner Joseph James, and arrived at Norfolk, Va., on Wednesday last week.

The Malta Times announces the death of the celebrated African traveller, James Richardson. He died in Africa.

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(For the Scientific American.)

Adumbration of the Creator's Transcendent Wisdom in the Adaptation of Things.

There is not a more fruitful theme to excite the human mind to gratitude, adoration, and praise to the omniscient Parent of all things, than the contemplation of the nicety with which he has adapted all things to all other things, to bring about the beneficent purposes which manifest themselves in every part of creation, and become the more obvious the more we contemplate them. Here the mind may feast as in a garden of perpetual and never-ending delight; and, when death closes a long life devoted to this subject, we shall have but entered on the threshold of an inexhaustible theme, which will likely engage the unremitting attention of immortal beings during an endless existence. But I can only mention, at present, a few isolated instances.

The earth's axis is inclined to the ecliptic at an angle of about 23½°: this position makes nearly its whole surface inhabitable—gives us the different lengths of days and nights and produces the changes of the seasons, with all their varying vegetable and animal productions, which could not all have existed if the position of the earth had been much different.

It is often stated that every part of the earth's surface enjoys an equal duration of the sun's light, but this is not accurately true: the dry land approaches the north much nearer than the south pole, and the earth moves faster through the northern part of her orbit than through the southern, because she is then nearer the sun, so that our summer, north of the equator, is about 7 days 17 hours longer than our winter, and the contrary in the southern hemisphere. And as it is day and night alternately but once a year at the poles, it follows, of course, that the duration of sun light must be proportional to the duration of summer and winter. Besides, if we count the duration of twilight at the poles, which there lasts about two months after sunset, and commences the same length of time before sunrise, there must be more light in the north polar region during the year than any where else, without taking moonlight into account; for the whole time of night would be only four months; whereas, at the equator, days and nights are always of equal duration, and every where else the aggregate times of days and nights during the year are very nearly equal.

If the earth's axis had been perpendicular to the plane of the ecliptic, then the sun would have always appeared to move in the equator, the days would always have been every where equal to the nights; there could have been no changes of seasons any where, and consequently the variety of vegetable and animal productions would have been very limited. Again, if the equator had stood at right angles to the ecliptic, the poles of the earth would have been situated in the ecliptic itself, and then, to a spectator on the equator, the sun, as he left the vernal equinox, would every day perform his diurnal revolution in a smaller and smaller circle, until he reached the north pole, where he would halt for a moment, and then wheel about and return to the equator in reverse order, increasing his diurnal circle until he reached the autumnal equinox, where he would be vertical for a moment in his passage to the south pole; here, in consequence of the refraction of light produced by the atmosphere, his whole diameter would be a short time above the horizon; and the two days when the sun was at the poles, would be the longest to the equatorial inhabitants. To a spectator living north of the equator, the sun, between the vernal and autumnal equinox, would advance continually northward, making his diurnal circuits in parallels farther and father distant from the equator until he reached the circle of perpetual apparition, after which he would climb, by a spiral course, to the north pole; and then as rapidly return to the equator, and begin to repeat similar appearances to those residing in the southern hemisphere. It is easy to perceive that, in this last case, the earth would be uninhabitable, for the norther and southern hemispheres would have alternate day and night of half a year's duration, except a short twilight near the equator, and the light of the stars. The same reasoning may also be applied to the moon.

I have heretofore shown that when water is vaporized it absorbs sensible heat. When the sun rises, in summer, he heats objects very fast, and would scorch every animal and vegetable being were this increase not speedily checked by the evaporation of water. On the contrary, when water freezes, it throws off heat, and thus warms the surrounding air. Hence, the warmer the sun shines the more water he evaporates, and the more he evaporates the more the heat is moderated; and lest this should not suffice, the Creator has made the additional provision of perspiration. Again, the increase of cold does not augment as fast, after the temperature of the air has arrived at the freezing point, as before, and sometimes not at all. If the cold continued to increase during the whole night as fast as it does the first hour after sunset, ice would be formed almost every night in the year, and vegetation could not take place. To avoid this, the all-wise Creator has so contrived his works that the water, which was converted into vapor by absorbing heat in the day time, is condensed by the absence of heat and made to give in the night what it had imbibed during the day, to surrounding objects—and hence the dew.

(To be concluded next week.)

A Moving Mountain.

The Genoa correspondent of the Newark Advertiser narrates the following incident:—

I notice, as apropos to this report of subterranean disorder, an account from Hungary of the actual movement of a mountain!—a feat which the Mahometan prophet tried to accomplish in vain. The Hungarian Gazette tells us that on the 13th ult.—one of the very days on which Naples was shaken—the mountain "Geleztas," in the county of Clausenburg, Transylvania, moved towards the mountain "Nenyikes"—both mountains being from 800 to 1,000 feet in height. The town of "Monorokezek," which was, before the movement, an hour's walk from the last named mountain, is now scarcely [illegible] paces distant from it—having been removed with the terrene movement—and is threatened momentarily with burial. This movement lasted from the afternoon of the 13th to noon of the 15th. It occasioned incalculable losses; all the plains at the foot and around the moved mountain, with their ungathered harvests, being ruined. In their place now appear rocks of great height, and the features of the landscape are entirely changed, No one of the old owners can recognize his fields. Waters have broken out in the whole vicinity, which is converted into a rocky marsh. The population of the village, some four or five hundred, fled to their next neighbors. The account of the phenomena is given with all the appearance of truth, and I transfer it to you as it comes to us here.

American Clipper Ships.

In every respect, as it relates to swift sailing vessels, America stands far in advance of all the rest of the world. This year she has gained imperishable fame in her yacht and steamship contests with England, and also with a new style of vessels named Clippers. These ships, it may be said, have come into existence for sea voyaging within two years.—They are built more for making fast passages than for carrying cargo. They are beautiful in shape. and carry a great amount of sail. The vessel of this class which created the greatest excitement in this city was the "Flying Cloud," built by Donald McKay, of Boston, and she has made the fastest run to San Francisco. She made the voyage from this city in 80 days. In one day she run 374 miles, averaging about 16 knots per hour. This beats our Atlantic steamers. In three days she run 992 miles. Our steamships must look to their laurels. We have the foreshadowing here of the passages which we yet expect from our steamships, namely, seven days from New York to Liverpool. It will require our steamships to run at the rate of about 17 knots per hour to do this. They will do it yet, and if we live twenty years longer we shall see it.

Cast Iron Fronts of Houses.

The Scientific American says that the great majority of new brick and free-stone buildings for stores which are now being erected in New York, have the fronts of their lower stories made of cast-iron. This is also the case in Baltimore; but in no city in the Union has there yet been attempted such a structure of iron as the building at the corner of Baltimore and South streets, for the Sun printing establishment.—[Baltimore Sun.

This is so; the Sun building referred to was designed and constructed by the ingenious Bogardus.

The American Arctic Expedition.

This expedition, fitted out by Mr. Grinnel, of this city, and associated with everything honorable to his name, has returned after a cruise of more than a year, in which incredible hardships were endured, and in which the greatest courage, patience, and energy were displayed by all, from the commander to the humblest mariner.

Ice-Locked and Drifting.—To give some knowledge of the difficulties experienced in navigating the Arctic seas, the expedition was locked in ice for nine months. During this time they drifted one thousand and sixty miles,—a polar drift of unprecedented extent. During this whole imprisonment in the ice, the two vessels suffered comparatively little damage. The Advance lost her bob-stays and part of her false keel; the Rescue had her cutwater and bowsprit literally chisseled off.

Having got both his vessels liberated, Capt. De Haven determined again to try to prosecute his search, and turned the Advance's head to the northward. He succeeded in reaching the upper Melville Bay region, but was there again hemmed in by ice.

From this he was not liberated until the 19th of last August, at which time the season had so far advanced that it was impossible for him to proceed and accomplish his purpose, even supposing that everything should be favorable and no ice intervene. He therefore determined with great reluctance to return home.

Scurvy.—During the time mentioned that dreadful disease, the scurvy broke out, and some things connected with it exhibited marked peculiarities. For example, Captain De Haven had a wound on his finger, made when a school boy, by a blow from a cane, and many years ago completely healed and forgotten, was re-opened by the disease. A similar result attended a wound which Dr. Kane received in the Mexican war, and indeed every man exhibited a similar illustration of this phase of the disease.

They called at the Greenland ports, where they obtained full supplies of fresh meats, vegetables, fruits &c., and Dr. Kane soon had the happiness of seeing the scurvy entirely disappear.

Safety of Franklin.—It is the opinion of all the officers, we believe, that there are hopes of Sir John Franklin being yet alive. Capt. Penny, of the British expedition entertains the same opinion, and he has returned and asked a powerful steamship to go back at once and commence the search anew. Lady Franklin has written a very feeling letter to Mr. Grinnel: "hope deferred maketh the heart sick," and she is failing fast with anxiety, fears, and doubts.

Curiosities.—The expedition has brought back a number of curiosities from the northern regions. Some boats used by the Esquimaux are curious pieces of sea furniture. They are made by stretching seal-skins over a light frame-work of wood, shaped very much like a flattened cigar, both ends being very sharp, with a hole in the top about 14 inches in diameter. The whole length of a boat is about 12 feet, by 14 inches in width, and 8 inches deep at the centre. The boatman slides his legs and hips through the aperture in the top of the boat, extending his legs lengthways. The upper part of the boat is covered with seal skin. The boatman propels his craft with a double-bladed paddle, about seven feet in length, made of light wood, and slightly fashioned, the main part about 1 1-2 or 2 inches in diameter, and the blades 4 inches wide, and ornamented with ivory. With this he moves his boat through the water, at a very rapid rate. By a dexterous movement with his oar, an expert boatman will completely turn his boat over, and come up on the opposite side, still retaining his accustomed situation. In this fragile vessel he pursues his avocation of spearing seals in the roughest weather.

A number of Esquimaux dogs have been brought by the expedition. They are very docile in disposition, but the very reverse in appetite. They eat at one meal as much as would feed three of our dogs, of the same size. They will soon get over this however, the climate will work the cure. They are stout built and very strong.

One of the officers of the Advance killed a white bear and the skin is brought home as a trophy. The bear measured eight feet nine inches from tip to tip. The foot of this bear measures twenty-one inches in length, including the claws, and about fifteen inches wide; and the weight was about 1,800 pounds. He was killed with buck shot while swimming in the water, under the bows of the vessel, impelled there probably by curiosity. The officers of the expedition killed quite a number.

Esquimaux Ladies' Dress.—Some dresses of the natives are rather curious, especially those around Baffin's Bay, some of which adorn the museum of the vessel.

The dress of the married lady is composed of a pair of short seal skin pants, fur outside, extending nearly to the knee joint, where it meets the legs of the boots, made of the same material, or of deerskin. The upper part of the person is covered with a kind of sack with a hood for the head, and sleeves made whole with the exception of a place for the face and arms. This also is made of sealskin or deerskin, and in the warmer weather is covered with a fancy-colored cotton cloth sack. In the coldest and wet weather the cloth sack is removed and a seal skin covering, without fur, placed in its stead. This composes their whole dress. The dress of an unmarried lady is distinguished by a broad band made of fancy figured webbing about two and a half inches wide, sewed on each side of the front of their pants, extending nearly the whole length of them. A married woman can also be distinguished from an unmarried one by the hair, which in both cases is tied upon the top of the head, and the ends of that of the married are colored blue, and of the unmarried red.

The boots are made very neat. The upper leather is colored. They tan deerskins with urine, and their sealskins are dressed in a beautiful manner, simply by drying and rubbing them with a smooth stone. A pair of slippers complete the wardrobe of a lady in the Esquimaux country; these are neatly fringed round the tops with white rabbits' fur. The dresses of the males are very similar to the married ladies, with the exception that they are longer and rather heavier.

Whales, &c.—White whales with green backs were seen in great numbers; the horn of a nar-whale, about five feet long, is an evidence that fish as well as land animals carry bayonets. Red snow water and Russian moss, a kind of eatables, are also subjects of more than mere curiosity. A party ascended an iceberg 300 feet high. Every step upwards was cut out of the ice.

Amusements and Exercise.—During the time that the vessels were frozen up in the ice, the men and officers practised every day in drawing the sledges, as they were expecting every hour almost to have their vessel crushed, and their only means of escape was to travel by ice across Baffin's Bay to the nearest port, Uppernavia, a distance of between two and three hundred miles. Two sledges of provisions, enough for thirty days' full rations, was all that could be taken along, and these were kept loaded and in readiness the whole time, to start at a moment's warning. The men also had their knapsacks ready for a move. Ten miles a day is all the distance that can be made in a day with a sledge—the ice being very uneven, and covered in many places with deep snow and frightful crevices.

For the amusement of the men, and to occupy their time, a theatrical company was formed, and performed nightly to a large audience, using the deck of the Advance as a theater, it being housed in. One evening during the performance, the mercury stood at 36° below zero, and the average during the day was 21°. Yet they did not suffer from the cold.

The expedition has returned without the loss of a man, which speaks volumes alike for the officers and men; and is no mean praise for the surgeon of the expedition.

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NEW INVENTIONS.

Improvement in Musical Instruments, Combined Pianoforte and Flute.

Messrs. James and John McDonald, Pianoforte makers, this city, have invented and taken measures to secure a patent for some very unique improvements affecting the combination of the pianoforte with the flute, organ, or other wind pipes, forming a combined instrument named "The Euterpean Attachment." The piano and flute accompaniment can be made to play on the same pitch, or the flute may be made to play an octave lower than the piano, at the same time. The piano can also be made to play alone; and the jacks of the piano can all be prevented from operating, whereby an effect is produced the same as if an octave and concert flute were playing together. The piano and flute arrangement can also be played separately as two instruments, the melody upon the flute, and the accompanyment upon the piano. The flute arrangement can also be played singly. The wind chest is arranged to occupy but very little space. This is an improvement whereby a combined instrument is produced of very varied powers and great range of action. It will, we hope, as it is a credit to their genius, be of great benefit to the inventors.

Improved Heating Stove.

Mr. J. M. Thatcher, of Lansingburg, Rensselaer Co., N. Y., has made a very good improvement in Air-Heating Stoves, for which he has taken measures to secure a patent. He employs a series of tubes or cylinders, arranged within one another above the fire box and around the chimney, with a space around and between every pair, a number of these spaces being connected at the top and bottom to form flues leading from the fire to the chimney and the intermediate spaces between the first named spaces, forming air passages, through which, and also through smaller tubes passing through the flues, the air passes to be heated for the more effectual heating of the apartment in which the stove is placed. The connections between the several spaces are formed in such a manner as to cause the heated products of the fire to ascend and descend through the spaces forming the flues, and to circulate through them all before reaching the chimney, but at the same time allowing the air to pass directly upwards through the intermediate spaces and small tubes to a chamber above them, from which it is distributed. The intensity of the heat can be regulated in the passages, so as to induce the greatest flow of air through the highest heated flues.

Improvement in Apparatus for Boring for Water.

Mr. John Thomson, of Philadelphia, has invented an improvement in machines for boring for water, for which he has taken measures to secure a patent. The improvements consist in employing a series of springs which are placed around and work loosely on the shank or rod to which the boring tool is secured, and which, by their elastic action, press against the sides of the hole and keep the rod of the borer in a true vertical position; these springs descend as the boring chisel descends, and thus the hole of the well is bored with vertical precision. This is an important consideration, when pipes have to be inserted afterwards in the hole; but, above all, it allows the boring action to be carried on without loss of labor by the angular action of the chisel. The boring chisel or auger receives a systematic rotating motion by means of a forked cap placed on the shank of the tool and worked loosely thereon. Small diagonal chains are attached to the springs and the cap, a pin attached to the shank catches into one of the forks of the cap as the shank ascends, and forces the cap upwards, the cap, (and consequently the shank of the boring tool) is turned by the chains assuming their own right line of tension.

New Wire and Picket Fence.

Mr. E. L. Hagar, of Frankfort, Herkimer Co., N. Y., has invented a new improvement in the construction of fences, which consists in the combination of pickets and horizontal wire cords, so constructed and united with the posts that the wires threading or running loosely through the pickets which they brace, may be strained or tightened by drawing up the ends. Measures have been taken to secure a patent.

ELECTRICAL PROCESS OF PURIFYING LIQUIDS.

The accompanying engravings illustrate an invention for extracting impurities from fermentable and other liquids, secured by patent in England and America, to Mr. Andrew Crosse, of Bloomfield, Somersetshire, England, The invention consists in applying electric currents to act on the liquors to be purified. In treating wine, beer, or other liquids, the currents can be applied before, during, or after fermentation. The best apparatus for applying electricity for the purpose stated, according to the opinion of Mr. Crosse, is that exhibited in the engravings—figure 1 being a vertical section, and figure 2 a side elevation; *a b* are porous earthen vessels, immersed in the liquid to be operated on, so that the upper part comes above the liquid, and when such apparatus is to be used in or applied to a closed vessel containing the liquid to be treated, the upper parts of the vessels, *a b*, rise out of the vessel con-

Figure 1.

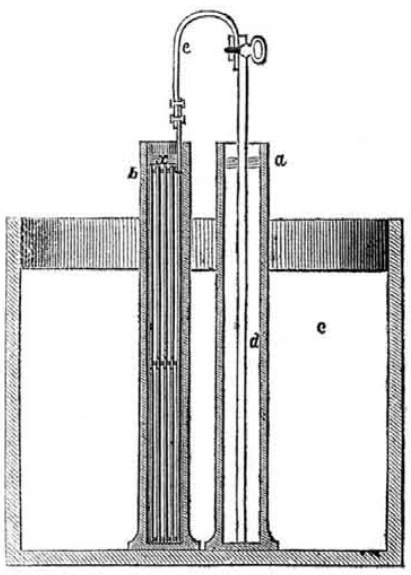
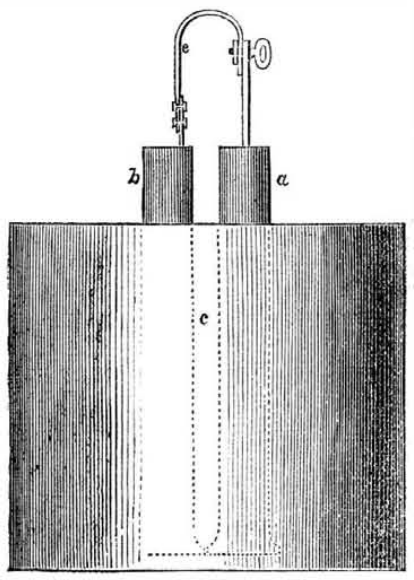


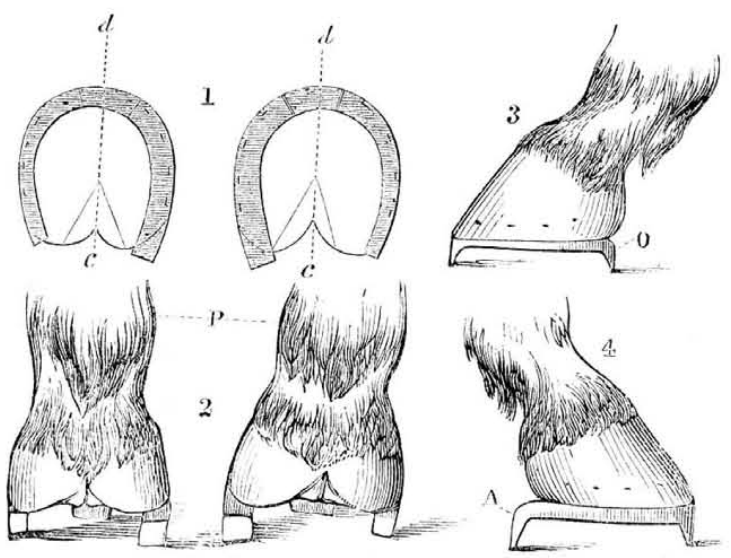
Figure 2.



taining the liquid, and are open to the atmosphere. *c* is the containing vessel, and it may be of any size. Supposing the said vessel, *c*, to contain wine, beer, or other fermenting liquid, the electric apparatus is made to act upon the liquid during fermentation, until it is ascertained that the proper degree of attenuation has been obtained, when the pure liquid is removed, casked, and closed. Water is employed in the porous vessels, *a b*, which are charged with clean water daily. In the vessel, *a*, there is a plate of zinc, *d*, and in the vessel, *b*, is placed a coil or cylindrical frame, *x*, fig. 1, of iron wire, and these are connected by a strip of sheet-iron, *e*. The specification states that the electric action on fermented liquid, in a closed cask or other vessel, prevents it becoming sour. The above apparatus is to be introduced into a cask or other vessel, in such a manner as to leave the vessels, *a b*, open to the atmosphere, and by such means may wine, beer, and other fermented liquids be restored from partial acidity or sourness, and preserved from becoming more acidulous. The invention may also be applied to purify water, and for this purpose a similar vessel to *c*, and a like apparatus, may be used. The impurities of the water would be precipitated, and any acid or alkaline properties would go to the vessels *a b*, and by such simple means will water be found to be purified. In applying the invention to sea water, the water is first distilled and afterwards operated on by the electric action, as set forth. To improve the taste of the sea water, it should, in addition, be made to pass in small streams through the air. Filtered water for drinking should also be made to imbibe the atmosphere in the same way. Water, without being charged with air, is very insipid to the taste. This invention, it is also stated in the specification, tends to preserve milk and keep it sweet, by the same means and action as that described for the wine, by simply placing the milk in an open vessel like *c*.

The claim of this patent is for the application of electric action to separate or extract impurities or matters from fermentable, fermented, or other liquids. We have presented the substance of the official specification derived from the Patent Office. We have not experimented with the apparatus, but the inventor must have been fully satisfied of its merits or he surely never would have been at the enormous expense of five hundred dollars for the simple fee to our Patent Office. In England it cost him somewhat more than this, but these sums are nothing to the benefit which can be derived from the invention by the public, if it accomplishes the objects stated. It is so very simple that any person can construct and use it; and in presenting it thus before our readers, we believe it will elicit no small amount of attention.

INTERFERING HORSE-SHOE.



It is our desire to set before our farmer, everything new and useful in the mechanic arts in which they have an interest; we therefore select from our worthy cotemporary, the "Boston Cultivator" the following inventions the illustrations of which we have had neatly engraved to explain its peculiarities in the fullest manner. The correspondent who describes the shoe is Mr. Soloman W. Jewett, of Weybridge, Vermont, who does it well:

"Interfering, or striking one foot against the fetlock of the opposite leg, is quite a common and serious difficulty with many a fine horse that carries a shoe. I design in this article to show how a horse may be shod, so as to prevent concussion while the limb is in motion, accompanied with a sketch of an interfering shoe, to be adopted in extreme cases. Perhaps there is no piece of mechanical work, except the planning and building of dwelling houses, where opinions and modes vary so much, and where skill and art are so horribly mangled as in horse-shoeing. I have many a time thought, that a blacksmith's shop would "turn black and blue," if a horse, rough shod, only had the power of speech!

Figure 1 represents two interfering shoes, with the inside quarters much wider, longer, and less curved, than the outside portion of the shoe; with the toe-cork set more upon the inside quarter, as may be seen by the line, *c d*, drawn across the centre of the hoof from the toe to the heel. When properly set, the inside quarter of the shoe lies more directly under the foot, as may be seen by the line, *c, d* drawn through the centre. Upon the inside, or quarter of the shoe, the holes to receive the nails should be punched as near the edge as possible, that the shoe may set well under the outer wall or crust of the hoof, when properly adjusted. Consequently, the inmost quarter of the shoe sustains more of the weight or bearing of the animal. This part of the shoe having more surface, it is not liable to settle on the road as the outer quarter. The toe-cork inclining more to the inner side of the toe of the shoe, and left the highest on the inner side, all helps to roll the hoof and fetlock outward.

Figure 3 represents the outside quarter of the shoe, when fastened to the hoof, as the thinest; a lighter heel-cork, and well set under the heel at O. By comparing this with the inside quarter of the shoe, as represented upon the same hoof in figure 4, you will observe the shoe to be thicker and larger, with a stronger heel-cork, which extends back from the heel at A, more than at O. The outside quarter or crust of the hoof, should be pared away more than the inner quarter, which latter should be pared as slightly as possible.—The inner wall or crust of the hoof being longer under the same quarter, the shoe is thicker; the heel-cork and inner portion of the toe-cork being longer than the opposite side of the shoe, all tends to spread the legs apart at the fetlock or pastern joint as at P, and prevents the striking of the hoof when the limb is in motion. See figure 2. The nails, especially those that fasten the inner quarter, should run well up to the hoof, the clinches short, and headed down, and often examined. The heel cork may be dispensed with in summer on gravelly and sandy roads. It winter a horse travelling in the trough or concave snow path, is more liable to interfere than upon the road in summer."

Mr. B. H. Andrews, farmer, Waterbury, Conn., objects, and justly so, in our opinion, to the theory of Mr. Jewett. He demurs to making the inside of the shoe the thickest, and asserts that it will produce the very opposite effect to that stated in the above. His practice is against that of the blacksmiths', to have the outside full and the inside well pared down, and he is never troubled with an interfering horse. This latter theory is the correct one in our opinion.

Improvement In Pumps.

Mr. William H. Nichols, of East Hampton, Middlesex County, Conn., has taken measures to secure a patent for an improvement, deemed to be a valuable one, in pumps, whereby the working action is averred to be much improved: it consists in employing a reciprocating box worked by a roller on a crank axle in the interior of said box, and fitting the body of the pump, which causes continuous pumping action by a reciprocating motion.

New Water Wheel Buckets.

Mr. Jacob J. Anthony, of Sharon Springs, Schoharrie Co., N. Y., has taken measures to secure a patent for an improvement in a new mode of arranging and constructing water-wheels. He employs straight flat buckets radial to the axis, and forming planes perpendicular to the plane described by the revolution of the face of the wheel, and combined with inclined buckets. The water is admitted on the wheel by spiral shutes.

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Scientific American

NEW-YORK, OCTOBER 11, 1851.

Mechanical Fairs.

Periodical exhibitions for the display and laudable rivalry in works of mechanism, agriculture, and art, are now very common in our country. We are glad of this, they have been the means of doing much good in every country where they have been established, from the days of Grecian glory to the present era. A very few years ago, such exhibitions were few and uncommon in our country, now the States, counties, and cities, have periodical exhibitions where our mechanics meet in the honest rivalry of ingenuity and skill. In ancient days the Grecian Fairs were the resort of all nations, and the Olympian Games were wisely instituted to attract the ingenious and enterprising of all nations. Almost every year some famous fair was held on the Corinthian Isthmus; at Delphi and Thermopylæ, a fair was held in Spring and Autumn, and in various other parts of the old world, the same kinds of fairs were not uncommon. There can be no doubt but the principal object of these fairs was barter, but if that is not the ostensible, it is the main object of all our modern fairs. We like the principles upon which our fairs are conducted and no country can profit so much as ours. Pecuniary and honorary recompenses are the true legal modes of encouraging rising manufactures. There can be no doubt but injustice and injury may sometimes be done in the awarding of of prizes, but still that cannot destroy the real good done. This consists in the assembling of the ingenious, the spreading out of their works to the public gaze, the emulation to excel which brings them together, and the trials which are sometimes instituted to decide upon the comparative merits of various machines. These things excite ambition, inflame the spirit of emulation, and the concentrated result of all upon the American mind, leads to personal and collective effort to excel—to do still better, to be surpassed by none.

The fair of the American Institute opened at Castle Garden, this city, on Wednesday, the 1st inst. The arrangements, so far, impress us more favorably than any fair which has taken place for a number of years. The managers appear to be the better for our scolding; we trust that it will be conducted throughout with the utmost impartiality, good sense, and dignity, and that neither fear nor favor will guide the committees to partial decisions. The machinery is not by any means complete in its arrangement or working order, we therefore cannot say much about it yet, but next week we shall publish engravings of some machines exhibited, and make comments upon others.

Patent Office Report for 1850.---No. 4.

Examiner Renwick's Report.—He specifies the exact number of applications referred to him for examination, like Examiner Page. The number was 529, for which 204 patents were issued, and 25 were not examined, thus making apparently 300 rejections, out of 504 applications, a great number indeed; but we judge that a number of these have not been finally rejected, as he says "a number of papers have been sent for amendment." He corroborates the opinion expressed by Examiners Page and Fitzgerald, respecting the inadequate force in the Patent Office to keep pace with applications. In respect to rejections for patents, he is quite eloquent "upon the disappointment experienced by an inventor after having been picturing to himself in no faint colors, the honors and profits which are to accrue to him from the production of his brain. A communication to such an effect is to all men a disappointment; others it irritates, and there is a small, I am glad to say, but a small number, who conceive that a decision against them furnishes good ground for a quarrel with this office. These parties generally labor under misapprehension as to the duties of this office, &c." Thus, as quoted, speaks Mr. Renwick; it will be observed that one of the quoted sentences exactly resembles that famous passage in a presidential message, "we are at peace with *all* the world and *the rest* of mankind;" the worthy Examiner says a communication of rejection is to all men a disappointment, *others* it irritates, &c. He is savage upon those who are dissatisfied with his rejections, but their reasons for being dissatisfied, at least many of them—are no doubt just and honest: Mr. Renwick cannot have forgotten one case this very year, upon which, in the first decision, he did not exhibit the right spirit, or a full understanding of the subject. A gentleman, modest, intelligent, ingenious, and long publicly known throughout all the south and west of this State, as a thorough-bred practical architect, made application for a valuable improvement in the construction of bridges. It was rejected, the inventor went to Washington, saw the Commissioner, was referred to Mr. Renwick. His representations were met with a spirit akin to ridicule, and the principles alleged to be embraced in the invention were denied. But quiet though our friend is, he is a determined man in the right, and he stated that he was prepared, as we know he was, with the testimony of the very first engineers in this State to back him up against the decision of the Patent Office. The patent was granted with a very slight modification of his claim.

We are inclined to attribute such hasty decisions to the too great amount of labor required of the Examiners, but it would be much better to let cases lie over, than make such improper decisions. It requires great research, and much study in many cases, to decide upon the novelty and correctness of advanced principles, and this requires no small amount of time. But we find great fault with the Examiners for putting so many inventors to much unnecessary trouble and expense, by causing them—when there is really no just occasion for it, a journey to Washington from distant parts of our country, to have rejected applications reconsidered. It is generally understood by inventors that the alteration of a few words in the claims, which is at last allowed, and which do not alter the sense nor the spirit of the [illegible] an exhibition of more weakness than good sense. This has naturally created considerable prejudice against the Patent Office. A very respected old friend of ours—a gentleman long known as a public man in this State, and distinguished for his inventions, his intelligence, great practical knowledge and skill—made application this year for an improvement in tools. He had made out his own papers, but was rejected out and out. He went to Washington, and, without being required to do any more than merely alter a few words of his claim, omitting nothing, but embracing all he first claimed, Mr. Fitzgerald ordered the patent to be issued. We hope there will be a decided reform in such matters; for we know it cost each of these gentlemen about double the amount of their patent fees to go to Washington. There are, perhaps, hundreds of rejected applicants who cannot go there, or who dread to go there, and who have as just claims to patents as the gentleman referred to. We know that, in a pecuniary sense, arising from the merits of the two inventions referred to, the inventors have justly realized considerable profit, which, without patents, they would not have done, as their inventions would have been pirated throughout the whole land. How much real injury has been done to inventors by such hasty decisions, we cannot tell—no doubt a very great deal. Mr. Renwick had certainly a fine field here for an expression of sympathy, but this would have compromited the character of the Patent Office.

There is just one other part of this Report to which we can allude at present. He says, "*true* inventors are often rejected, having their claims disallowed many times, merely on account of their not claiming that to which they are entitled. By examination of references furnished by this office, at each time it rejects, they at last perceive, and are able to define the precise point in which the invention consists; their way to a patent is then a clear one, and the propriety of withholding the same up to that time, would appear to be obvious,"—so says Mr. Renwick; we think he misapprehends his duties, as do the other Examiners who act upon the same principles. One thing about him is, he is transparent in his Report, and would never be able to make a treaty with a Clive. We have here a clue to the great amount of useless trouble Examiners give themselves, and we may thus express it—"An inventor makes application for a patent, he does not claim the exact new points; Examiner Renwick sees them, and knows a true inventor, but it is none of his business to tell him what the new points are; he refers the applicant to this work and that work (but we beg to state here, that such works are referred to only in cases of rejection, not for the purpose stated by Mr. Renwick) until the applicant makes a new discovery—the new points—when Mr. Renwick at once orders a patent to issue." If Mr. Renwick sees the new points at once (and he does so, or he contradicts himself) why does he not point them out immediately, and thus save himself and the inventor further trouble? Why does the Patent Office refer to books, which few inventors have the means of examining? The object, evidently, is more to mislead than assist.

The object of organizing the Patent Office upon its present basis was for Examiners to give applicants the very information refused, and referred to above. We have not set down aught in malice, but presented the two salient points of this Report in respect to rejected applications fairly before our readers. By the Reports of Examiners Fitzgerald and Renwick, we see that it gives them a great deal of trouble to make the community believe they have been upright and just in their decisions, but their arguments are strong against themselves, and the spirit exhibited is that of justifying an accusing conscience, which is, indeed, a very bad spirit.

Propeller Steamships.

The "Glasgow," a new propeller, arrived at this port on Tuesday week, in fourteen days from Glasgow, Scotland. This passage is about equal to thirteen days from Liverpool, and may be considered the fastest ever made across the Atlantic by a screw steamer. It is not a long time since we made this remark—"the time is not far distant when every vessel which navigates the ocean will use steam, either as an auxiliary or prime propelling power." This prediction required no prophetic vision to insure its correctness in respect to fulfillment: since that time the increase of ocean steam vessels, has been extraordinary, and in no one particular so much as in screw propellers. The first direct communication which we had with that small but wonderful European country, Scotland, was by the "City of Glasgow," last year; that vessel was sold to the Liverpool and Philadelphia Co., and to fill up the gap occasioned by her removal from this route, the new steam vessel just arrived has been built. Her builders are the same gentlemen who constructed the "City of Glasgow" and the "City of Manchester," and she is constructed on the same lines as the latter, but as we have never seen her, we can only say a few words about the "Glasgow," which is, we have been informed, the pioneer of a permanent new line to run regularly between the two cities rendered famous by the first successful experiments of two great names in the mechanic world—Watt and Fulton. The "Glasgow" is 1,962 tons, being much larger than her predecessor, the "City;" her engines are 400 horse-power, screw 14 feet diameter; her length of main deck is 225 feet, breadth 36 feet; she has four masts, (two of them hollow iron tube), and is fully rigged. She is a vessel of great capacity, beautiful model, and possesses good accommodations; her hull is iron. Her builders are Messrs. Todd & Macgregor, of Glasgow, practical engineers of great celebrity. The screw is of three blades, and when we looked at the result produced by the one small propelling device of 14 feet diameter, and compared it with two huge paddle wheels of 30 feet diameter, we could not but conclude, all things considered, that the screw was the superior propelling device. To show how quick the engineers do business on the other side of the water, (a fact which we must and shall profit by) from the day in which this steamship was launched until the day she sailed to New York, only three weeks elapsed: her boilers, engines and cargo were all put in during that brief space.

We will soon have five lines of screw propellers running between our country and Britain. At present we have three, namely the Philadelphia and Liverpool, the New York and Glasgow Lines, and Boston and Liverpool Line. From what we have heard about the vessels of this latter line, we anticipate very successful results: the "S. S. Lewis," the pioneer of it, will soon make her first Atlantic voyage; she was built in Philadelphia, and is a splendid vessel. Her hull was built by Messrs. Birely & Sons, and is most substantially constructed. Her frame is almost entirely of white oak, and the planking and ceiling principally of the same material. The frame is bound together with diagonal iron braces, each 60 feet long, 5 inches wide, and 1 inch thick. These braces cross one another, and let into the timbers, being bolted through them and rivetted on the outside, and at every intersection are bolted together. The hull was planned and superintended by the ingenious Capt. Loper, and she is driven by one of his propellers—the wheel being 18 feet 4 inches, with four fans. Her engines were designed, we believe, by Capt. Loper, and for compactness, beauty, and power, are said to be superior to those of any other propeller steamship afloat. This line will be composed of four fine vessels. Next year we will have four screw steamers for freight and passengers belonging to Messrs. Burns & Co., of the Cunard Line; these, with the four of the Philadelphia Line, and the Glasgow Line of two, together with the "Great Britain" and "Sarah Sands," which, we understand, are to be put on the route between New York and Liverpool, will make twelve large screw propelling steamships that will be running between Europe and our country next year. This looks like doing business in an improved way, for a year ago there was but one such vessel making Atlantic voyages; and from what we have heard from a number of sources, we may confidently assert that half as many more will be added to this list before the first of 1853.

Our fine packet ships will soon be looked upon like the old packets on the Erie Canal, for assuredly the propellers will very quickly take all the passenger trade out of their hands.

South Carolina Institute.

The third annual Fair of the South Carolina Institute takes place next month. It will be opened on the 17th, and continue during the week. The object of this Institution is the promotion of art, mechanical ingenuity, and industry, and the means adopted to secure the desired ends are so good, and accord so like unit to unit with our views, that we cannot but state what they are, in order that some of our mechanical exhibitions at the North, may learn something by them.

Specimens in every branch of mechanism, art, and industry; also of cotton, rice, sugar, tobacco, and all other agricultural products, are solicited, for which suitable premiums will be awarded.

The following special premiums are offered:—For the six best specimens of steel made from Spartenburg or other iron, the product of a southern State, and manufactured into edged tools of any kind—a gold medal.

N. B.—A specimen of the steel in bars to be sent with the tools.

For the largest quantity of cocoons raised on one plantation, not less than ten bushels—a gold medal or $50.

For the largest quantity of spun silk, the produce of any one plantation, not less than ten pounds—a gold medal or premium of $50.

For the best sea island cotton gin, on some new principle, superior to that now in general use; or for any real and important improvement on the present one—a gold medal.

For the invention of a suitable machine for pulverising red pepper—a gold medal.

For the best steam engine—a gold medal.

For the best model steam fire engine—a gold medal.

Contributors who forward articles must send full descriptions of the same.

Here, like our agricultural premiums, specific prizes are to be awarded for specific articles. This concentrates the mind of exhibitors to excel in particular departments. It will be seen that a prize is offered for a new gin to clean Sea Island Cotton, the necessity of which invention was pointed in No. 1 of our present volume, as suggested by the Hon. John F. H. Claiborne. We hope for something good to come out of our notice. We would recommend to our southern friends to offer a still higher prize, and let it be given out this year for the next exhibition.

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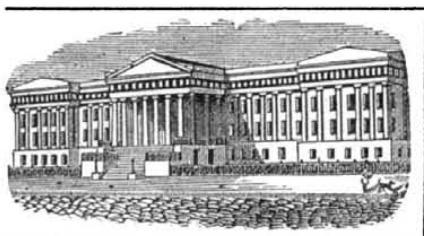

☞ Reported expressly for the Scientific American, from the Patent Office Records. Patentees will find it for their interest to have their inventions illustrated in the Scientific American, as it has by far a larger circulation than any other journal of its class in America, and is the only source to which the public are accustomed to refer for the latest improvements. No charge is made except for the execution of the engravings, which belong to the patentee after publication.

LIST OF PATENT CLAIMS

Issued from the United States Patent Office

FOR THE WEEK ENDING SEPTEMBER 30, 1851.

To Timothy Gilbert, of Boston, Mass., for improvement in Pianofortes.

I claim the combination of the return screw and button, or equivalent contrivance, or contrivances, with the hammer and fly, and its retractive spring, so as to operate in manner and in connection with the same and other parts, substantially as described.

To Laroy Litchfield, of South Bridge, Mass., for improvement in Weavers' Shuttles.

I claim making the spindle and spring both in one piece, by extending the spindle behind the hole, for the pin that fastens it into the shuttle, and reducing it to a proper thickness, and bending it to form the spring required to hold the spindle in its proper positions in the shuttle, either with or without the catch on the end of the spring, in combination with the pin or its equivalent, against which the spring acts, to hold the spindle in the different positions required, substantially as described, thereby avoiding the inconvenience arising from the loosening of the screw which holds the spring in other shuttles, and saving the additional labor required to fit in, when the spring is made separate from the spindle.

[This is a good improvement.]

To N. B. Livingston, of Portland, Ind., for improvement in Weighing Carts.

I claim the construction and arrangement, substantially as described, by which a weighing apparatus is capacitated for easy removal from place to place, be the adaptation to each other of the containing and weighing apparatus and of the running gear; that is to say, by making the fulcra for the lever or weighing beam, upon the axle near the wheel, the arm, with its sliding weight lying upon the pole or tongue, and the axle affording, by its bent form, free access to the contents of the box, when discharged, by means of the valve.

To Wm. Moore, of Bellville, Ohio, for improvement in Self-acting Presses.

I do not claim either the cams or the temple joint, when used singly, but I claim the combination of the eccentric cams rolling on each other, so as to avoid friction, in connection with the braces or temple joint, as above described, for the purpose and substantially in the manner aforesaid.

To G. F. Woolston, of the District of Orangeburg, S C., for improvement in Saws for Sawing Boards.

I claim forming and arranging teeth of saws, substantially as described.

To Robert Bates, of Philadelphia, Pa., for improvement in instruments for the cure of Stammering.

I claim, first, the employment of a tube in the mouth, which will admit of speaking and of the passage of air when either the tongue or lips, would prevent the passage of air, substantially as set forth.

Second, the employment of the adjustable spring pad, substantially as set forth.

Second, the joint employment of the mouth tube and the adjustable spring pad, at the same time curing the guttural, lingual, and labial disease of stammering, substantially as set forth.

To Maria Vaughn, of Greenbush, N. Y., administratrix of Joseph C. Vaughn, deceased, (assignor to J. C. Bell, of Greenbush, N. Y., & Robt. Chrystie, Jr., of the City of New York,) for machine for making Wheel Tires.

I claim the combination of the upper and lower dies, with the welders, receiving motion from wedges attached to the upper and falling die; the whole acting to shape a tire, on all parts of its surface at the same time, substantially as described in the specification.

To Thos. Nicholson, of Falmouth, Va., for improved Maze Lock.

I claim the disc, with its concentric and radial passages, or their equivalents, in combination with the bolt end, operated substantially in the manner [and for the purpose described.

To T. J. Sloan, of New York. N. Y., for machine for arranging Screw Blanks and articles of a similar character.

I wish it to be distinctly understood, that I do not limit myself to the precise mode of construction and arrangement specified, as these may be varied without changing the character of my invention. What I claim is the combination of the inclined ways, substantially as described, with a trough, and provided with a pin or pins, or their equivalent, as described, so that, by the motion of the trough towards the ways, or vice versa, the screws or other articles, will be forced up the inclined ways, hanging by their heads, as described.

To L. H. Parsons, of Lambertville, N. J., for improvement in Plotting Scales.

What I claim is not the division into equal parts, with or without subdivisions, of one or more of those parts of the continuous edge of a scale or rule; nor the use of a vernier for measuring or describing right lines, nor the manner of attaching the vernier slide to the main plate of the instrument; nor the use of a lever or slow motion screw for adjusting the motions of the vernier slide, but the combined application, in one and the same instrument, of the graduation upon the edge (to obviate the imperfection and inconvenience attending the use of dividers or compasses) and the slide, carrying with it the several primary divisions of the unit; and those divisions carrying with them, respectively, by means of the vernier, the several secondary divisions, into hundredths or otherwise, so as to enable the operator to distinguish and apply hundredths, or half hundreds, of the smallest unit, with a great rapidity, precision, and ease, as tenths of the same unit, with the scale graduated on the edge, without a slide; and so, also, that whatever parts of a unit are required, or whatever the whole length of line to be measured, the whole amount of motion required, in lengthening or shortening the instrument, is only equal to the the number of additional or intermediate hundredths or other subdivisions, never exceeding one-tenth of the unit of measure.

To N. A. Prince, of New Gloucester, Me., for improvement in Fountain Pens.

I claim the hollow, flexible, and long extension of the reservoir or tube, to extend up and be secured to the arm of the writer, substantially in the manner and for the purpose as specified.

To Elijah Whiten, of Hingham, Mass., for improvement in machines for Sawing Volutes.

I claim, first, the manner in which I produce the two motions necessary to be given to the block, in order that it may be sawed in the required form, viz., the screw rod, with its right and left screws cut upon it, meshing into the pinions, by which motion is communicated to the horizontal rods, the toothed wheels, pinions, or spurs, grasping the edge of the block and causing it to rotate, in combination with the bevel pinions, screw rods, and arm, by which a rectilinear motion towards the saw is given the carriage and block, producing the result described.

[This is considered a very excellent improvement.]

To Matthew Spear, of Bowdoinham, Me., for improvement in Mitre Boxes.

I claim one or two rotary saw guides, with sliding gauge rests, &c., and mechanism for rotating the guides and fixing them in any desirable position, or positions, as specified, in combination with the improvement of making or applying the uprights, or vertical supports of the saw, to the bars, so as to be capable of being turned down to an angle with the horizon, for the purpose, as described.

To Alex. Jimason, of Parkesburgh, Pa., for improvement in Shields for Valves.

I claim surrounding the valve by a shield, constructed substantially in the manner described, and fitting closely enough to regulate the ingress and egress of the water, or steam, to such a degree as to prevent the slamming of the valve, in opening and closing.

To Joseph Putnam, of Salem, Mass., for improvement in the manufacture of Clay Pipes.

I claim the use of the wire gauge frame, constructed substantially as described, in moulding clay or earthen pipes, in the manner and for the purpose specified.

I also claim the improvement specified, in the sack, in which said pipes are suspended, to be dried, said improvement consisting in confining said sack to two rails, kept parallel, by means of cross bars, forming, with them, a rectangular frame, as described.

DESIGNS.

To Nathan Chapin, of Syracuse, N. Y., for Design for Tables.

To Ezra Ripley, of Troy, N. Y., for Design for Stove Fronts.

Aerial Voyage.

Our friend John Wise made his 124th aerial voyage on the 25th ult., at the Ohio State Fair. His balloon Ulysses contained only 9,000 cubic feet of gas, and he made an ascent with his wife and son, after which he came down and left his son, and then went up again with Mrs. Wise, and came down again, after which he ascended alone and attained an altitude of 10,000 feet. In describing his voyage he says:

I entered a stratum of mist—it was highly electrical—agitated by convolutionary air-whirls. In this mist, and above it, every thing in and about the balloon became intensely elastic—a spruceness, if I am allowed the term, pervaded the whole mass that rendered it quickening and musical. The touching of the valve cord produced sounds like a guitar—the cords by which the car was suspended gave out sounds like a string instrument at every whirl of the electric medium.

When in the mist it had the appearance of dust, but viewed from above, it had a dingy and gloomy appearance. It was a distinct stratum several hundred feet thick.

Respecting distinctness of hearing in the atmosphere, he says:—

"I was aloft until sunset. The sunset scene was a grand one. The tops of the clouds in the distance were magnificently illuminated and variegated with the colors of the rainbow. While viewing this scene from over a mile high, my attention was suddenly directed to a conversation passing between two individuals. At first I thought it a delusion, but upon close observation it proved to be a fact, for I could distinctly hear words, such as "I don't know," "did you see him." I tried the experiment upon my own voice, and found it to echo distinctly, which also brought shouts from persons below; probably from those whose conversation I heard."

Effect upon his health and curious electrical stratum:—

"Although the air at this point was only 40 deg., my pulse was quickened to not less, I judge, than 90 a minute, and my veins were considerably distended. I felt that I was getting much relief from sickness I had labored under for several weeks; and I now candidly say, that I feel a permanent improvement of health, really astonishing to myself, and altogether ascribed to the electrical invigoration received in a highly charged atmosphere.—This was one object in resuming my voyage after Mrs. Wise and Charles were landed.

While passing through the cold electrical stratum, theory would assign to the gas a loss of buoyancy from condensation, but in this case its buoyancy was increased, as I am certain its ascent became accelerated from the time it entered it without discharging any ballast.

For the Scientific American.

Machine for Making Ladies' Combs.

Knowing some may be curious to understand something about the machines at present in use for making ladies' combs, I will try and describe one so as to render it easily understood.

The machine is driven by a belt pulley or crank. There are two cutters attached to the lower ends of two mandrils, or one mandril split in two lengthwise, and playing vertically in two metal boxes placed above one another.

The horn of which the combs are made is first cut into the required shape in single pieces, out of each one of which two combs are made, two teeth of each comb being cut during one revolution of the crank. The horn is placed upon a carriage which runs upon ways under the cutters, and, by turning the crank, each half of the mandril, in its turn, is forced down, driving its cutter through the horn, which is made and kept soft by heat from a fire burning in an iron box beneath the carriage. Two double pointed cams, placed above the mandrils, operate them at the appropriate periods; these cams are so arranged that each of the four points acts alternately—two on each half—thus forming one side of two teeth at every quarter revolution of the crank. After having done its work, it is forced back by a spring, and is ready to be acted upon by the next point of the cam. In the meantime the horn is moved forward by means of a thick double pointed cam operating a steel hand, which acts upon a rack on the carriage. The horn is thus cut in the middle, forming two combs, with backs complete. G. L. F. B.

Portland, Me.

Spirit Varnishes.

Almost every workman that uses varnish has his own receipt for making it. These receipts are mostly remarkable for the number of ingredients, some of which are of scarcely any use, and others absolutely hurtful to the wished-for effect.

Brown rosin, gum sandarac, mastic, shell lac, seed lac, dissolved in strong spirit of wine, generally form the basis; Venice or common turpentine is added to prevent the varnish from cracking as it dries; camphor, anime, benzoin, alemi, are occasionally introduced; also gamboge, turmeric, dragon's blood, saffron, and lamp black as coloring ingredients.

The common varnish is made by dissolving 4 ounces of sandarac, and 6 ounces of Venice turpentine, in a pint of spirit of wine.

A harder varnish is made by dissolving 2 ounces of mastic, 1 ounce 1-2 of sandarac, and 1 ounce 1-2 of Venice turpentine in a pint of spirit of wine.

A very hard varnish, much used of late by the name of "French Polish for Furniture," is made by dissolving 3 ounces of shell lac, with 1 ounce each of mastic and shell lac in 2 pints 1-2 of spirit of wine in a gentle heat, making up the loss by evaporation by adding more spirit at the end of the process.

The plain solution of either mastic or sandarac in the proportion of about three ounces to a pint of spirit of wine makes very good varnish.

Yellow varnishes are used by the name of lacquers to give a golden color to metals, wood, or leather: the following is, perhaps, that most used: color a pint of spirit of wine with three quarters of an ounce of turmeric, and fifteen grains of hay saffron; filter and dissolve in it two ounces each sandarac and elemi, one ounce each dragon's blood and seed lac, and three quarters of an ounce of gamboge.

Black varnish is made for sale by dissolving half a pound of sandarac, and a quarter of a pound of yellow rosin, in half a gallon of spirit of wine, and then adding two ounces of lamp black to color it. But workmen generally make it by dissolving black sealing wax in spirit of wine.

The making of varnish from copal is a matter of difficulty, as copal is not soluble itself in its raw state in the spirit. One method is to add camphor to a pint of highly rectified spirit of wine until it ceases to be dissolved, and to pour this charged spirit upon four ounces of copal, keeping up such a heat that bubbles may be counted. When cold pour off the varnish, and if all the copal be not dissolved, add more spirit impregnated with camphor. Another method is to heat the copal and let it drop as it melts into water; a kind of oil separates from it, and it becomes soluble in ardent spirit, and still more so if the melting is repeated.

Astronomical Observatory in Albany.

An astronomical observatory is to be erected in the north part of Albany, on a spot of high table land, which is to be connected with the Albany University and be under the charge of Prof. Mitchel, the celebrated astronomer. Through the liberality of Mrs. Chas. E. Dudley, who gives $10,000 for the purpose, and Stephen Van Rensselear who gives the land, the institution is enabled to erect the structure.

We are glad to see this; Albany is laying a sure foundation for a good name. She is not situated for much commerce, nor has she natural manufacturing resources; she can be a literary city, and wisely are her inhabitants using their influence and means to make her one, but she has much to do yet.

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TO CORRESPONDENTS.

S. C. T , of Geo.—What kind of saw did you mean the engine to drive? If an upright, we should not use an engine of less than six horse-power; a double three horse engine can be purchased for $330, not including the boiler, which would cost as much.

A. W., ef Ill.—We know of no plan invented to clear over-shot wheels of back water; two re-action wheels on one shaft have long been used, these are the kind you refer to. In theory, a water ram will throw two-thirds the water to one-third the height, barring friction.

J. D., of Pa.—A patent could not be obtained for the substance you propose to make, but if a new method of making it was discovered by you, then you could obtain one. Catechu is made upon the same principle and for the same purpose. The carriage coupling is not new; we have seen others like it. We would not like to undertake to get a patent for the natural paint; as it is our opinion that Blake's would not stand law, and we would not advise any person to spend money in a case respecting which we had any doubts as to validity: it is a fact, and to the shame of the Patent Office be it spoken, that while Mr. Blake was granted a patent, other persons were refused for discoveries as good and of a like nature: if one got a patent so should the other.

W. P. P., of Pa.—The wool picker of Mr. Daniels is formed of a series of concave rollers geared together at the ends; they are arranged in combination with the picker cylinder and slow turning rollers placed above the delivery; you will readily see that yours would interfere with it very materially, and unless you can purchase the right to use it of the inventor, you had better not put up a machine. The patent is dated April 3, 1849.

A. R., of Va.—The "Hot Blast Patent" trial came off in Trenton, N. J., on the first week of April, 1849, before Judge Greer; the plaintiff received $350 damage; the decision appeared to us correct,—the remarks of the Judge were highly appropriate.

M. H. S., of Texas—Dr. W. W. Reid, of Rochester, N. Y., is the assignee of Hibbard's Tanning process.

G. R., of Mass.—We have examined the subject of your letter of the 3rd inst., and find that the method is essentially the same as the Safety Fuse of Alfred Stillman, of this city, for indicating low water in boilers.

I. B. L., of Vt.—Yours of the 2nd came duly to hand; the case will be decided by the Commissioner and due advice will be given.

A. O. C., of Pa.—You had better read the article over again; it is evident you have misunderstood its meaning.

G. L. F. B., of Me.—To publish your remarks about the machine you refer to, would be doing an unintentional injustice to the inventor; he is a manufacturer, and knows what he is doing,—the machine works well.

R. R., of Ohio—You cannot, of course, use the patent of another without paying for it: this is as it should be. Your combination may be new.

A. H., of St. Louis—We have nothing additional to say about your plan, but hope to hear of your success.

P. C., of St. Louis—If you will send on a drawing and description of your invention we will give our opinion on it; it should be called an improvement—you not being the original inventor of the machine.

D. E. W., of Ct.—There is nothing new, that we can discern, in the sketch you have sent us, of the water wheel: the water has a rotary motion in the oldest of our re-action wheels, before entering, and the apertures of discharge are like many we have seen: it is not easy to hit upon anything new in this field; we have no doubt but it is original with you.

A. E., of N. Y.—You are probably aware that a steam excavating machine has long been in use in our country, and has been introduced into England, for excavating on the railroads: it is somewhat different from yours, but we have a drawing of it, and could furnish you with it, if remunerated for the labor, but perhaps this information is sufficient, and if so, we shall be glad to have rendered the service.

J. P. M., of N. Y.—No; you cannot expect to derive more power from your fountain head than it possesses; you can raise the water by the hydraulic ram above the fountain head, but you will not be able to discharge the same quantity—no mechanical arrangement can overcome a law of nature.

W. B., of La.—To make the pipes, if pure Roman cement is used with sand it will not crack, and makes good pipes: cores of round wood, thoroughly dried and slightly oiled, should be used, but lead pipe, we believe, would suit you best, if your spring freely runs all the time A little plaster of Paris is useful along with the cement, to harden fast, but it is liable to crack: if you grind up the sand in water, and apply it in paste to the outside, it will cover up the pores, and when dry will be quite hard.

P. L. S., of Troy.—We do not see anything patentable in the cutting knife you send: a shape is not patentable, but for a similar device see cutting knives, Z, employed in Hutchinson's Barrel Machinery, page 121, Vol. 6, Sci. Am.

E. L., of Vt.—It is difficult to establish a patentable claim upon your press. We have never noticed the employment of a swinging incline plane, but in Dick's Patent the rotating incline is employed, and one might be considered analogous to the other, unless a difierent combination could be established, which does not appear in your drawing. We think you had better not make an application.

A. C. I., of N. Y.—The mean ultimate resistance of wrought-iron to a force of compression, as useful in practice, is 12 tons per square inch, while the crushing weight of cast-iron is 49 tons per square inch; but for a considerable range, under equal weights, the cast-iron is twice as elastic, or compresses twice as much as the wrought-iron.

Money received on account of Patent Office business for the week ending October 4th.

M. M. C., of N. Y., $55; T. S., Jr., of Ct., $40; E. B. L., of N. Y., $40; J. R., of N. Y., $45; H. & Co., of N. Y., $45; W. B., of N. Y., $55.

Specifications and drawings belonging to parties with the following initials have been forwarded to the patent office during the week ending October 4th.

E. B. L., of N. Y.; W. B., of N. Y.; J. R., of N. Y.; F. F., of N. Y.; S. W. R., of Ct.

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In reply to many interrogatories as to what back numbers and volumes of the Scientific American can be furnished, we make the following statement:

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Of Volume 6, all: price in sheets, $2; bound, $2,75.

New Edition of the Patent Laws.

We have just received another edition of the American Patent Laws, which was delayed until after the adjournment of the last Congress, on account of an expected modification in them. The pamphlet contains not only the laws but all information touching the rules and regulation of the Patent Office. We shall continue to furnish them for 12 1-2 cts. per copy.

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Persons desiring the claims of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office;—stating the name of the patentee, and enclosing one dollar as fee for copying

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BEST CAST STEEL AXLES AND TYRES, (a new article,) for Railroad Carriages and Locomotives. The quality of this steel is sufficiently attested in the announcement that it has carried off the first prizes awarded at the World's competition of 1851, in London. The axles are in general use on the Continent, and are now offered in competition with any other that can be produced; and to be tested in any way that may be desired by the engineers of the United States, either by impact or by torsion. This steel is manufactured by Fried Krupp, Esq., of Essen, in Rhenish Prussia, represented in the United States by THOS. PROSSER & SON, 28 Platt st., N. Y.
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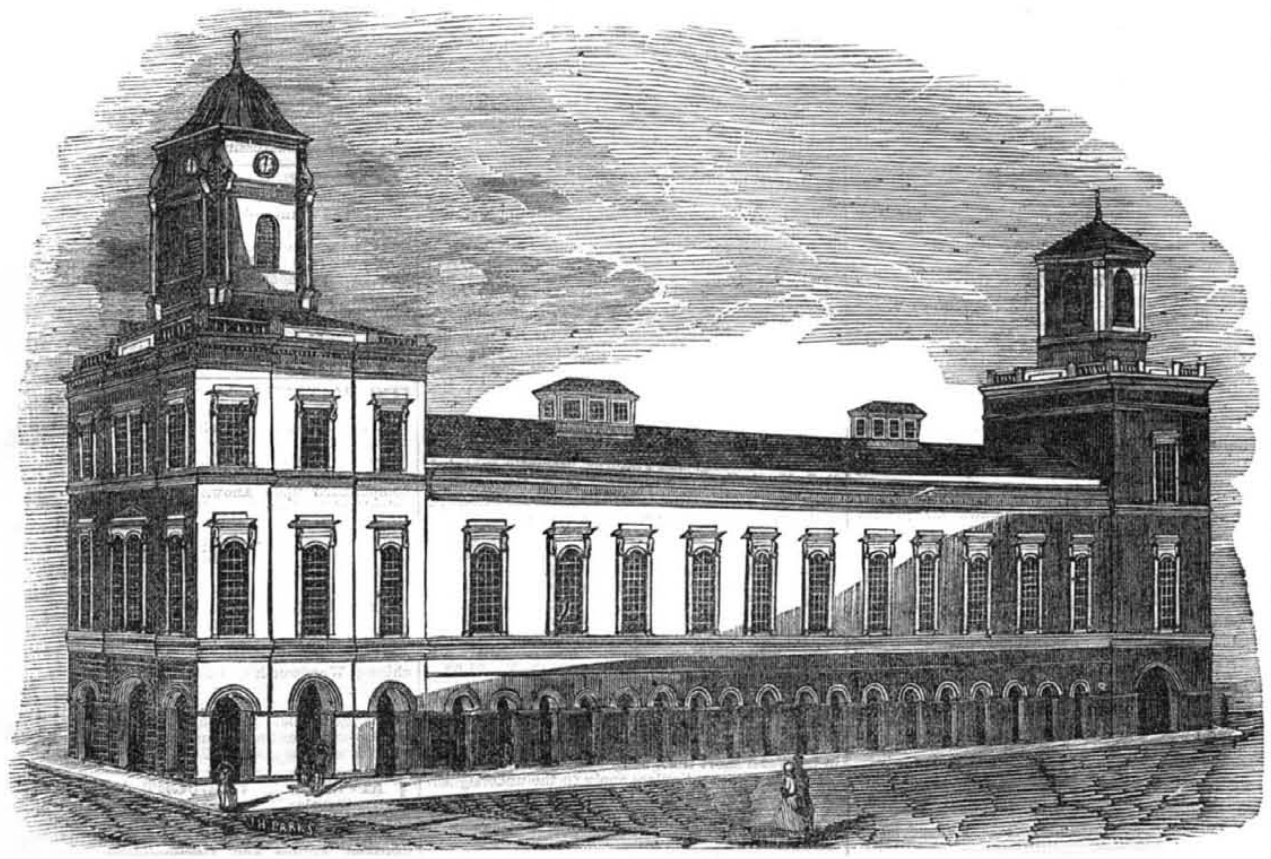
THE GREAT MECHANICS' HALL, AT BALTIMORE.



We have already noticed in our paper the rapid progress made by the "Maryland Institute for the Promotion of the Mechanic Arts," and have alluded also, to the great building just erected by that flourishing society for its important purposes. As this building is now in a state of readiness for the approaching exhibition, (to be begun on the 20th October, inst.), and as it deserves, from its extent and the laudable object to which it is to be appropriated, more than a passing notice, we have gathered, through our Baltimore correspondent, and the officers of the Institute, the following particulars:—The site of the Hall is a very eligible one, fronting as it does on Baltimore street (the Broadway of the Monumental City), within two or three hundred yards of the Merchants' Exchange, Post Office, and City Hotel, and, in short, at the most frequented part of the street. The lot is that on which the head section of the old Centre Market stood, and has a sixty feet front, with a depth of three hundred and fifty-five feet to Second street. The basement story is a Tuscan Arcade, having seventy pilasters, with capacious archways, affording free access to the market, to which this story is still devoted. These pilasters, at the sides of the house,are finished with cast-iron imposts and archivolts of an appropriate design, corresponding with the finish on Baltimore street, where Connecticut brown stone is used for the first story. This market department is said to be the most complete and capacious in the United States, having a twenty feet ceiling, supported by one hundred neat cast-iron columns. The butchers (by whom it will be occupied two mornings in the week) design fitting it up with a grand array of superior white marble stalls, and other costly fixtures, that will render it more like a palace than a place of business.

The Halls of the Institute, though over the market, and supported by the same foundation, are entirely separated from it, and so well has this been done, that a stranger might enter the Institute many times without knowing of the market's existence. The main entrance to the Institute is by a large archway in the centre of the buildtng on Baltimore street, where you ascend a flight of steps, fifteen feet wide, to the first floor. On a broad platform, halfway (ten feet) up this flight, there are ticket offices on either side. A spacious vestibule is reached at the head of these stairs, on either side of which is a large office or dressing room. The grand stair hall, on this floor, is twenty-five feet square, back of which is a grand meeting or reception room fifty-five by thirty-six feet. Directly in front of the landing, at fifteen feet distance, is a doorway twelve feet wide, opening into the grand saloon: this room "in the clear," is two hundred and sixty by fifty-five feet, with a thirty-two and a half foot ceiling; it has twenty windows seventeen and a half by seven, and a grand promenade gallery, seven feet wide on the sides, and ten feet at each end of the room, running entirely around it at a height of fourteen feet from the floor, and supported by eighty strong and beautiful iron brackets set into the walls. This obviates the necessity of obstructing the main floor by pillars or columns, or of using suspension rods, thus leaving it entirely free and clear, the largest clear floor in America. This great room is finished in a simple but really beautiful style: to render it fit for concerts or public speeches, due care has been taken in the shape of the cornice, etc, and a beautiful cone is placed there which it is thought will much improve the acoustic properties of the saloon. Though not containing as much ornament as many other of our public halls, it is thought, as a whole, this is the finest Ball or Exhibition room in the country. Some two thousand persons may promenade the handsome galleries, while four thousand more may be seated, or six thousand could easily stand upon the main floor, making its capacity very great.

On a level with the floor of the grand saloon there are, in each of the end buildings [see cut] large rooms, and above them are other large rooms on a level with the gallery floor, in the grand soloon. There is, in the end building another floor still, with rooms equally large.

The stair hall, on Baltimore street, contains a double flight of steps to the second floor (on a line with the gellery) and the third story, and by this means an ambulatory of eight hundred feet circuit is afforded, (of the galleries and two end rooms), being nearly an eighth of a mile. This second floor, at the front end, is divided into three rooms for several classes of the "School of Design." The third floor contains a very large room, (fifty-five by thirty-three feet) with a twenty-two feet ceiling, designed for the Library, and in which light iron galleries will be placed at a height of twelve feet. Adjoining the library room, on this floor, and on either side of the stair-head, is a fine large room for School of Design classes. The grand stair hall, at this end, will be lighted by an appropriate glass dome on the roof.

At the other end of the building (on Second street) there are three floors also, as already mentioned, all communicating with the grand saloon. These three rooms, each fifty-five by forty feet, are to be used for the display of all working machinery, and such heavy articles as may be deposited at the Institute exhibitions. On the first of these floors is being fitted up a beautiful thirty horse-power steam engine and an approved boiler, through which the motive power will be derived at the Exhibition. A large hoist-way, with an apparatus that will raise five tons at a time, has been provided here, that will prove highly useful. At this end of the building two flights of stairs have been placed, leading to the street, by which an additional mode of egress is afforded to the immense audiences that may be expected to throng the house. We will not undertake to add an estimate of the capacity of these various apartments, so numerous and so large, to that of the grand saloon, but the reader will not lose sight of the immense space contained in the building, after leaving the saloon out of view altogether. Besides all these apartments, the roof contains a storeroom two hundred and sixty by twenty feet. The whole building will be brilliantly lighted at night with gas. The grand saloon alone will contain some two hundred and sixty lights arranged in two rows, one around the face of the galleries, and one above the galleries, projecting from the walls under the cornice, about six feet below the ceiling. This arrangement will display the great size of the room to advantage, and afford a pleasing relief to the eye, dispensing, as it does, with the glare of light concentrated by the chandelier plan of lighting.

We have now given a hasty outline of the interior, and will add a few words upon the outside appearance of the building.

The style is Italian, of that type known to architects as the Astylar, and embodies the novel application or combination of several features which may be called American. —There is a striking architectural beauty and unityabout it, though the architect was much restricted in presenting a complete structure, by several considerations that were forced upon him by peculiar circumstances. The building on Baltimore street is 75 feet high to the top of the cornice, and the same height at the opposite end on Second street. The main saloon portion, is fifty-four feet high to the crown moulding, or seventy feet to the apex of the roof. A beautifully proportioned cupola rises from the centre of the Baltimore street end, seventy feet high above the cornice, making an extire height of 145 feet. The cupola will contain room for an illuminated clock, and a space for a large city bell below it. The end on Second street has a look-out or a projection from the centre of the roof, in character with the finish at the other end, and the central roof (over the saloon) is finished with three small elevations at the peaks, that break its straight appearance, and answer the purpose of assisting the ventilation.

The walls are very heavy and of the best Baltimore brick, laid flush, it being designed to give the entire building four coats of oil paint to correspond in color with the brown stone of the basement on Baltimore street. The ashlering of this stone is of finely pointed work, and the mouldings, capitals, cornice, &c., are rubbed. The numerous windows in the building will be surrounded with much fine work that will add very materially to the splendor of the outside. The roof is a most durable one, covered with large and excellent slate, the best, perhaps, ever quarried in this country. The very best materials have been used throughout the building, and great care has been observed in insuring strength and durability. The foundation is as sound as a rock, the house being built upon six hundred and fifty large piles driven home, and firmly braced on the heads with immense timbers, surmounted again by six feet of solid masonry. The number of brick used in the building is about 1,750,000. The cost of the whole building was at first roughly estimated at $55,000, but owing to the nature of the work (as connected with the market) and the public encouragement to put up a finer establishment than at first intended, the amount of $85,000 or $90,000 will probably be reached, including the necessary furniture.

The representation at the head of this article gives but a meagre outline of this great building as it is, and really will be when the outside is finished, and does the building and architect a palpable injustice. It does not fairly exhibit the finish of the arches, the cornices, the windows, the roof, or the cupola. We are indebted for it to the Institute, by whose direction it was made in too short a time to admit of a more truthful or artistic cut.

For the plan and details of their proud edifice, the Institute is indebted to the practical skill and fine taste of Mr. Wm. H. Reasin, one of its members, a practical builder who has undertaken the profession of an architect. Mr. Reasin is yet a young man, and bids fair to establish an honorable fame in that beautiful science to which he has devoted himself.

The superintendence of the erection of the Hall devolved upon Mr. Josiah Reynolds, one of Baltimore's most popular builders.

The general business management and control of the work was entrusted to a building committee of seven managers of the Institute, who have performed their highly responsible and delicate duties in a creditable manner, and deserve great praise for their untiring patience and their general good management. Their names are Wm. Bayley (chairman), Josiah Reynolds, Benj. S. Benson, W. Abrahams, Saml. E. Rice, Edward Needles, and David M. Adams.

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SEVENTH VOLUME OF THE

SCIENTIFIC AMERICAN.

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